

POOR LEGIBILITY

**ONE OR MORE PAGES IN THIS DOCUMENT ARE DIFFICULT TO READ
DUE TO THE QUALITY OF THE ORIGINAL**

MORTALITY PATTERNS OF WORKERS
in the
NIAGARA PLANT

by

Howard E. Rockette, Ph.D.
Vincent C. Arens, M.S. (Erg)

Department of Biostatistics
University of Pittsburgh
Graduate School of Public Health
Pittsburgh, Pennsylvania 15261

June 1963

PREFACE

This report is a summary of the analysis done under contract for the Niagara Plant of Hooker Chemical Company. The priorities and objectives of this study were reviewed by a committee chaired by Mr. G. F. Schuur and consisting of representatives from both union and management prior to initiation of the study. The committee also consisted of Dr. Harry Sultz and Dr. Ralph Buncher. I would like to thank the members of this committee for their continuing support throughout the duration of this research project and for their response to the many requests for logistical support.

Specifically, I would like to thank Mr. Fred Olotka, Neil Zayes, John Fiori, Charles Walker, Hal Johnson, Joe Reale and Jim Woodhouse for their effort in the development of the job groupings; Dr. Terry Briggs for providing the information relative to employee exposure to various chemicals. In addition, Dr. Zavon and Kathy Brown were helpful in supplying information that was needed for the study when it was necessary to deal at the corporate level.

The accomplishment of this project entailed the time of several staff personnel. Specifically, I would like to acknowledge the contributions of Mrs. Nancy Haberman, key punch operator; Mr. Steve Sefcik, computer programmer; Mrs. Diana McDivitt and Mrs. Dianne Falkel, clerical personnel, and Betty Valentine, secretary. I would also like to acknowledge Ms. Marian Reid who reviewed and coded all of the death certificates.

Table of Contents

I.	Introduction	1
II.	Chapter II - Description of the Cohort	3
A.	Definition of the Cohort	3
B.	Verification of Completeness of the Cohort	3
C.	Analysis of Subgroups	7
D.	Followup	7
E.	Employment Histories	8
F.	Description of the Cohort	9
III.	Chapter III - Materials and Methods	23
A.	Data Processing	23
B.	Analysis	27
IV.	Chapter IV - Exposure	30
V.	Chapter V - Overall Mortality Patterns	36
A.	Mortality Analysis for Females	36
B.	Overall Mortality Patterns for Males	36
C.	Mortality Patterns by Time Since First Employment	42
D.	Mortality Patterns by Calendar Time	43
VI.	Chapter VI - Mortality Patterns by Department	48
A.	Mortality Patterns for Twelve Major Departments	48
B.	Summary of Mortality Patterns by Department	101
VII.	Chapter VII	
A.	Introduction	119
B.	Analysis by Subcohorts	119
C.	Analysis by Calendar Time	123
D.	Mortality Patterns Using Logistic Regression	130

Table of Contents (continued)

Chapter VII (continued)

E. Effect of Smoking on Respiratory Cancer	133
F. Effect of Birthplace on Stomach Cancer Mortality	135
VIII. Chapter VIII - Analysis of Mortality Patterns by Job	140
A. Introduction	140
B. Job/Departmental Combinations Showing a Significant Excess	140
C. Analysis of Mortality Patterns by Job	143
IX. Chapter IX - Analysis by Length of Employment	151
X. Chapter X - Exposure to Various Chemicals	181
XI. Chapter XI - Summary	182
XII. References	186
XIII. Appendix I - Mortality Rates	188
XIV. Appendix II	193
XV. Appendix III	214
XVI. Appendix IV	217
XVII. Appendix V	218

OxyChem.

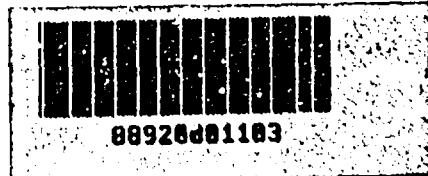
CONTAINS NO CB.

AT&T DOCUMENT RECEIPT OF C
92 FEB 28 AM 8:38

February 21, 1992

8EHO-0292-2461 Init

Document Processing Center (TS-790)
Office of Toxic Substances
Environmental Protection Agency
401 M Street, SW
Washington, D.C. 20460
Attention: Section 8(e) Coordinator (CAP Agreement)



Subject: Occidental Chemical Corporation ("OxyChem")
Toxic Substances Control Act ("TSCA")
Section 8(e) Compliance Audit Program
Agreement No. 8ECAP-0063

Dear Sir:

Attached find one original and two copies of the following document:

- Mortality Patterns of Workers in the Niagara Plant

This document is being submitted pursuant to the TSCA Section 8(e) Compliance Audit Program ("CAP") and a CAP agreement executed between OxyChem and the U. S. Environmental Protection Agency (Agreement No. 8ECAP-0063).

The identity of the chemical(s) tested in the study listed above are as follows:

- Mixtures of chemical substances.

The adverse effect(s) noted in the study listed above are as follows:

- A death certificate-based study with no primary based data collection from employees: therefore, no strict control for smoking and other possible confounding factors. As an SMR study, however, it followed most methodological standards. However in spite of study inefficiencies, the following information was found: Statistically significant excess of stomach cancer and respiratory tract cancer in the male cohort. Statistically significant excess of malignancies in certain workers. Excess respiratory tract cancer in certain workers. Excess stomach cancer in certain workers.

If you have any questions on the information contained herein, please contact me at (716) 286-3358.

Sincerely,

Ladd W. Smith
Director, Product Stewardship



Occidental Chemical Corporation

Corporate Environmental Affairs

Occidental Chemical Center

300 Rainbow Boulevard South, P.O. Box 720, Niagara Falls, NY 14207-0720

716/286-3000

OxyChem.

FITS DOCUMENT RECEIPT OF C

8e supplement

93 SEP 27 PM 4:0 Confirms No CCR

8EHQ-0993-2461

Via Certified Mail - Return Receipt Requested



8EHQ-92-2461
SP001 89/27/93

September 18, 1993

Mr. Terry O'Brien
United States Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

89938000174



Re: TSCA §8(e) Submission
Mortality of Workers at the Niagara Plant (Document Control Number 8EHQ-0292-2461)

Dear Mr. O'Brien:

Enclosed find pages 44, 45 and 80 of the referenced document. If you need any additional information, please contact me at (716) 286-3108.

Sincerely,

R. M. Givonetti

Raymond M. Givonetti
Manager - Product Stewardship



Occidental Chemical Corporation
Corporate Environmental Affairs
Occidental Chemical Center
360 Rainbow Boulevard South, P.O. Box 728, Niagara Falls, NY 14302-0728
716/286-3000

4 pgs.